West Virginia Department of Environmental Protection
Division of Air Quality

West Virginia Emissions Inventory

Basic Reporting Guidance

CY2014

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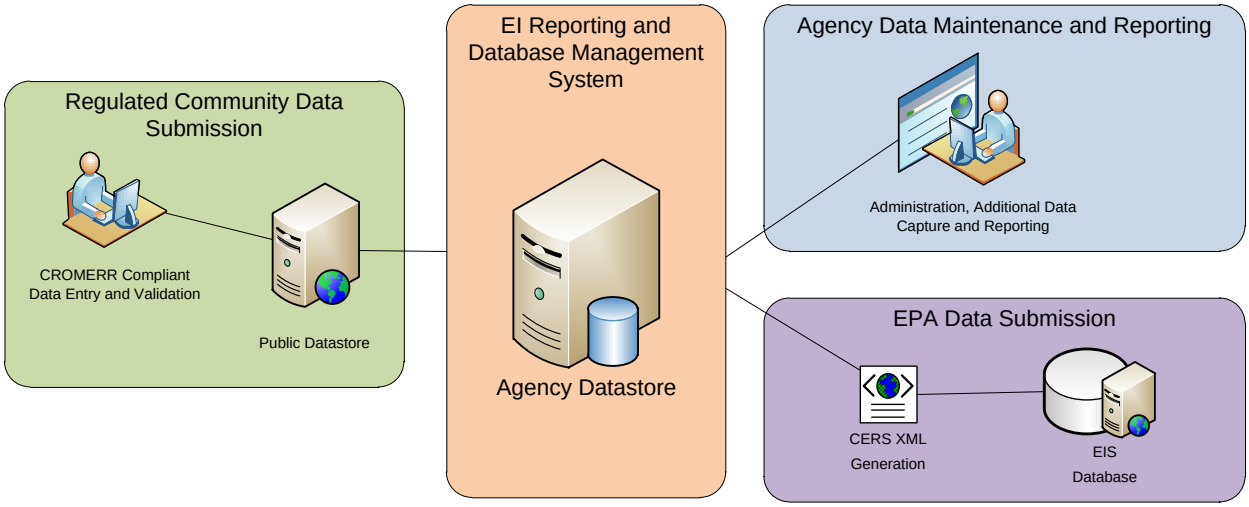
1 Background

Historically, the West Virginia Department of Environmental Protection, Division of Air Quality (DAQ) used a software product called *i*-STEPS to manage point source emissions inventory data. For the most part, *i*-STEPS met DAQ's emissions inventory program's point source data management needs. It had the capability to collect data from facilities, allowed them to quality assure the data after it was received, and then to generate export files to satisfy the U.S. EPA reporting requirements. However, *i*-STEPS's layout design reflected the U.S. EPA's Aerometric Information Retrieval System/AIRS Facility Subsystem (AIRS/AFS). The National Emissions Inventory (NEI) data system's format changed over the years and most recently was re-engineered again into the Consolidated Emission Reporting Schema (CERS) for its latest Emissions Inventory System (EIS). Fundamental differences between *i*-STEPS and the CERS schema caused the contractor who developed and supported *i*-STEPS to conclude it would no longer be able to support the system without costly system redevelopment. Faced with the prospect of not having contractor support for the aging *i*-STEPS system, a number of state and local agencies who used *i*-STEPS met at the 2008 Emissions Inventory Conference to discuss their options. The agencies agreed to form a consortium to apply for an Exchange Network grant to design a modern emissions inventory data system to replace *i*-STEPS. As a result, State and Local Emissions Inventory System (SLEIS) was selected to facilitate the emissions inventory data collection, quality assurance, and reporting to the USEPA.

As illustrated below, SLEIS allows non-deferred Title V sources to submit point source emissions inventory data and related meta-data via a web-based Cross-Media Electronic Reporting Regulation (CROMERR-compliant reporting system) and to better manage and review collected data, which includes the quality assurance of emissions inventory data submitted by regulated entities. Also, SLEIS includes an Exchange Network interface to manage the generation and submission of XML files to USEPA's Emissions Inventory System (EIS).



This document's purpose is to provide basic guidance and to address questions and problems that have risen during previous years of actual SLEIS use.

2 Before Getting Started

In order to utilize the SLEIS web application, you must first register as a SLEIS user and be linked to one or more point source facilities. Until you are a registered user, you cannot access data on SLEIS. The SLEIS Facility User Registration Form and the form instructions are available by clicking **here**.

Complete the registration form and email it to DEP.AEI@wv.gov. Please note there are four roles an individual can be assigned; administrator, submitter, editor and viewer. A user can be assigned three of these roles; administrator, submitter, and the choice of editor or viewer. An editor can both view and edit the facility's data whereas a viewer can only review a facility's data and will not be able to make any data edits. Each facility must have at least one administrator and one submitter. Users can be assigned multiple roles as well as being assigned to multiple facilities. However, only one administrator should be assigned to each facility.

An administrator must be an employee of the facility/corporation and supply a company email address on the registration form. To become an administrator, mark a "Y" (yes) on the form. Registered administrators can request that other company employees and consultants/contractors be assigned specific SLEIS roles for their facility(s). However, a

consultant/contractor **cannot** be assigned as an administrator. These employees and consultants/contractors must be a registered SLEIS user.

Consultants/contractors must complete and submit the registration form leaving the "Company/Facility Name" and "Facility Id#" fields blank. Registered consultants/contractors are added to the registry, but are not assigned any SLEIS user roles and will not be able to view any facility data on SLEIS. However, a facility administrator can specifically request via a company email a consultant/contractor be given access to their facility data. An administrator can request a consultant/contractor be assigned with submitter and editor rights for their facility; however, as previously mentioned they cannot be assigned as an administrator. These requested roles only apply to the facility making the request and consultants/contractors will not be able to access or view any other facilities in the SLEIS database.

Upon receipt of a completed registration form or assignment requests, the DAQ will process your request. The DAQ may contact you or the facility administrator to verify the submitted information. After processing your SLEIS registration, you will receive an email at the address provided on the registration form with instructions on how to proceed. Once the email is received, you only have 24 hours to log in and establish a SLEIS access password.

Please note your email address also functions as your SLEIS user ID and will be used in the event you forget your password or need to reset your password. Choose a secure email address you plan to maintain and use for future submittals.

3 SLEIS Information

The information provided below describes some of SLEIS's main functions and addresses some common questions concerning these functions. In addition, the SLEIS "Welcome" page also contains news items about SLEIS.

3.1 Software Considerations

SLEIS can be accessed at https://apps.dep.wv.gov on the DAQ webpage. From this page, you will be able to directly link to the SLEIS web application software.

For the best performance, the following software requirements and information should be considered:

- A reliable internet connection is needed, but connection speed is not a major SLEIS concern.
- SLEIS works in popular browsers like Internet Explorer 9.0, Google Chrome, or Mozilla FireFox. Older versions of Internet Explorer such as 7.0 running under Windows XP have known software issues and are not recommended.

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- Screen resolution should be at least 800 by 600 to allow for good readability and ease of editing.
- All data entered into SLEIS is automatically stored on the DAQ server. There is no need to either set up SLEIS specific directories or download or install any special software as long as an appropriate internet browser is used.
- Although your SLEIS data resides on our server, the DAQ cannot view it until you formally "Submit" your emission inventory in SLEIS.
- The SLEIS "Submit Inventory" function is only available if you have been granted the "Submitter" role by your facility administrator.
- SLEIS's "Request Amendment" or "Repudiate" functions can be used to re-open or withdraw a submitted inventory.

3.2 Main Screen Buttons

The main screen in SLEIS contains a series of buttons representing different inventory information. Except for the "Facility" button which opens details about the facility, clicking a button will open a list of emission sources in the identifier column. Each emission source can be viewed  or edited  by clicking the

corresponding action button on the screen's far right, which reveals the source's details and the information being requested. Additional information about each button is provided below.

The SLEIS back button  is located on the main screen in the top right-hand corner. This button will move up one level in SLEIS and not back to the previous page. For example, clicking this button will move from the first page (list of emission sources) under the "Emission Unit" button back to main screen. The SLEIS back button will appear on other screens within SLEIS and functions in the same manner as described above.

To return to the previous page, use your internet browser's back arrow instead of the SLEIS back button discussed above.

Please note the terms "plant" and "facility" are interchangeable. Those terms have the same meaning as the word "source" as used in the 1990 Clean Air Act Amendments, Section 503(a).

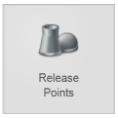
3.2.1 Facility Identifier 

Over the years, the DAQ has used several different types of numbering schemes to identify facilities. This has led to some confusion within the regulated community, as well as within the DAQ. The facility ID has contained various representations and combinations of the EPA Region, State, County, Air Quality Control Region (AQCR), and Plant numbers.

In SLEIS, the facility ID is structured by using the West Virginia state code, followed by the County code, and then the assigned plant number. This numbering scheme is also used by the DAQ's Rule 13 and Title V permitting groups.

As an example, the John Amos Power Plant was the 6th plant assigned a number in Putnam County (county code 079) West Virginia (state code 54). Therefore, John Amos' facility ID is "54-079-00006". The same facility number used in SLEIS is also used when completing the Certification of Data Accuracy form, Declaration of Data Confidentiality form, and Title V Cross Reference Table.

3.2.2 Release Points



A “Release Point” in SLEIS refers to any place where emissions enter the atmosphere; not just “smokestacks” in the traditional sense. Enter each release point and actual venting parameters. If a release point does not have a definable height and diameter, enter the release point type as “fugitive”.

Please note the release point information provided may be used in atmospheric modeling by the USEPA. The USEPA routinely models selected pollutants to determine potential down gradient impacts. Therefore, release point parameters such as release point height, volumetric flow rate, and exit gas temperature can greatly affect the modeling results. For example, modeling a release point with a facility provided one-foot stack height may show high near-by pollutant concentrations suggesting a potential toxicity concern; when in reality the stack height may have been 60 feet and the resulting modeling would show no impact to the surrounding area.

To simplify data input, it is a good idea to first define all release points in the database before inputting information under the “Unit Processes” button. When adding information in the “Release Point Apportionment” tab from the unit processes button, a pick list is made available to choose a corresponding release point.

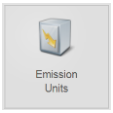
3.2.3 Control Devices

In SLEIS, control device information along with all pollutants controlled and pollutant-specific control device efficiencies are consolidated on the single “Control Device” button. Control device information must be entered first prior to entering data into “Unit Processes”. See Section ***3.2.5 – Unit Processes*** for details on connecting control devices to unit processes.

Control device information must be entered first prior to entering data into “Unit Processes”.

The USEPA routinely revises their approved list of control device codes. Using an unapproved code causes errors when the inventory is uploaded to the USEPA's Emissions Inventory System (EIS). The current approved list of control device codes are provided in ***Table D – Control Device Codes***. When reviewing your emissions data, please verify the appropriate code is being used and if necessary update the code to the device that best describes your operations.

3.2.4 Emission Units



The "Emission Unit" button includes equipment specific information such as the equipment type, operating status, and design capacity. As a good starting point, it is suggested using the facility Title V permit to organize emission units in SLEIS.

A single emission unit can be established for a group of individual emission units. However, there are reporting situations where the DAQ requests splitting larger groups into two or more smaller groups. For example, individual emission units operating on different schedules or equipment within the grouped emission unit subject to different air regulations.

Organize emission units subject to major federal requirements such as MACT, NSPS, PSD, or BART which are triggered by start-operation date, design capacity, type of equipment, or potential-to-emit into separate groups.

3.2.5 Unit Processes

The "Unit Processes" button contains data on the pollutant generating processes or activities at or within a particular emission unit. The SCC (Source Classification Code) identifies the type of process or activity. Please ensure that the SCC listed accurately reflects the unit process operations. In edit mode, SLEIS provides four drop-downs to describe the unit process and select the SCC number. SCC numbers are either eight digits for point sources and ten digits for non-point or area sources. The

SCC numbers used for the DAQ's purposes should always be eight digits. If a ten digit code appears, please correct before submitting SLEIS. Use of an inappropriate code can result in an incorrect interpretation of the provided data during the DAQ and USEPA reviews. Lists of SCC number are located on the SLEIS webpage and the address is provided in ***Table F – Webpage and Email Summary List***.

To avoid having to re-enter data, first enter the "Release Points" stack and vent data before entering any data regarding equipment generating or emitting air pollutants.

To avoid having to re-enter data, first enter the "Release Points" stack and vent data before entering any data regarding equipment generating or emitting air pollutants. SLEIS will allow entering the emission units' data first; however, the data will not be saved until it is "hooked" to an existing release point. If this happens, the emission unit data entry must be "cancel" resulting in the loss of the recently entered data and requiring data re-entry once the associated release point has been created.

To connect a control device to a unit process, click the unit processes button, go to the "Control Approach" tab, and select the appropriate control device from the pick list. Once a control device is connected to a process, the provided control and capture efficiencies are available for calculating emission rates depending on the pollutant calculation method selected for the process.

WARNING: *If you leave the capture efficiency blank, SLEIS assumes the capture efficiency is zero percent and the overall emission control efficiency (calculated using capture and control device efficiency) will also be zero percent.*

"Capture Efficiency" refers to the percentage of the total exhaust gas (emissions) vented that is routed to a control device. Normally, the capture efficiency is 100 percent for any scenario where process equipment is connected directly to a control device via pipes or ductwork. For situations such as hoods where only a portion of the exhaust gas is vented to a control device, use a capture efficiency less than 100 percent. **WARNING:** If you leave the capture efficiency blank, SLEIS assumes the capture efficiency is zero percent

and the overall emission control efficiency (calculated using capture and control device efficiency) will also be zero percent.

Before submitting your data, verify the reported emissions and related efficiencies are what is expected. Small errors, such as entering 0.01 versus 0.001, can result in emissions that are an order of magnitude too high and could falsely elevate a facility's risk level during the USEPA's national toxics assessment.

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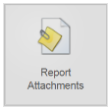
3.2.6 Process Emissions

The "Process Emissions" button is the heart of the SLEIS inventory. Here the pertinent emission related data for each emission source resides. This data includes emission source identification, the source's actual hours of operation and operating schedule, annual throughputs, and specific details and actual emissions from each emission source. The accuracy of this data is critical as it is provided to the USEPA who will model the information to determine if a source and/or pollutant may have an adverse impact on the surrounding environment or community.

For combustion sources intended to generate steam or electric, provide the annual fuel throughput rates. These rates are commonly required in the USEPA's modeling effort and if not provided the facility will be contacted by the DAQ. This data is not normally considered confidential. However, if this should be the case, provide the confidential information in accordance with the guidance provided below in Section ***3.6 – Confidential Data*** and not in SLEIS.

Additional guidance concerning emissions and pollutants are discussed further below in this document.

3.2.7 Report Attachments



The last button on the main screen is the “Report Attachment” button. This button allows the submitter to provide additional information relevant to supporting or explaining information provided in the SLEIS submittal. Also, the required Declaration of Data Confidentiality and Title V Cross Reference Table Excel spreadsheets can be attached to the SLEIS submittal.

The Signature page cannot be submitted using the report attachment button.

However, the Certification of Data Accuracy page requires a “wet” signature and must be submitted separately to the DAQ or can be scanned and emailed to the DAQ. The Signature page cannot be submitted using the report attachment button.

In addition, the attachment button can be used to provide supplemental information or data requested by the DAQ or USEPA.

3.3 Reports

On SLEIS’s main screen, SLEIS provides predefined summary reports. These reports summarize emissions by source, release point, or emission unit. Also in the bottom left-hand corner on the main screen, there is a “Print Report” button which prints the entire SLEIS submittal. This copy of record is required by USEPA protocol. Although the entire SLEIS report is provided, the layout is not always logical and the report lacks page numbers. Additionally, for quality assurance purposes the “Export” button under the “Release Points”, “Control Devices”, “Emission Units”, and “Unit Processes” buttons provide a summary, which is another method of verifying inputted data. Executing these buttons will download associated zip files containing a series of comma separated value (.csv) files, which look like a spreadsheet if exported into Excel. These files provide an effective means of reviewing your data and are considered a better overall

data report than the copy of record report generated by the print report button.

3.4 Request Amendments

Once a facility has submitted an emission inventory, the inventory can be amended. Amendments must be requested and can be accomplished by clicking the "Request Amendment" link, providing a reason for the amendment, and clicking the submit button. The request will be sent to SLEIS where the DAQ can either deny or accept the request. If accepted, a SLEIS email will be sent back to the requester's email and the inventory will be opened to amend.

When making a request, the request is submitted to SLEIS and not directly to the DAQ, which does not immediately alert DAQ personnel to the request. To more expeditiously address your request, it is recommended that a separate email be sent to David Porter at david.j.porter@wv.gov.

Once the amendments have been made, the submitter must re-validate the inventory for potential errors. Additionally, the amended inventory must be re-submitted. If not, the DAQ will not receive the amended inventory.

3.5 Download Template

Although only used by a small portion of the SLEIS submitters, the "Download Template" button appearing in the left-hand corner on the main SLEIS screen provides a mechanism to download the emission inventory into comma separated value (.csv) files, which looks like a spreadsheet if imported into Excel. These files can be revised and uploaded back into SLEIS in lieu of inputting data directly into the various SLEIS fields. These can be particularly useful where a facility uses a third party air emission inventory system to calculate emissions and downloads the emissions directly into the SLEIS csv file. However, please note the column heading names or positions or structure cannot be changed; doing so will create uploading issues and the data will not be successfully uploaded. If using

these files to report your emission inventory and to ensure proper compatibility, it is recommended to contact the DAQ first.

3.6 Confidential Data

USEPA's Consolidated Emissions Reporting Rule and the November 10, 2003 DAQ guidance developed via Interpretive Rule 45CSR31B clearly address the issue of what information is "emission data" and thus non-confidential. Pursuant to 45CSR31 and 45CSR31B, some data claimed confidential in past emission inventory submissions may no longer be considered confidential data. In addition, our procedure for handling information legitimately claimed as confidential is different with the SLEIS application.

Although we are unaware of any successful unauthorized access into SLEIS, please bear in mind your SLEIS data and attachments, whether before or after you formally submit your inventory, are located on an internet server. Additionally, SLEIS includes some automated tools used for assembling and transferring data to USEPA which may inadvertently include SLEIS data you wanted kept confidential.

Therefore, never include any confidential information in SLEIS and transmit confidential information separately in a more secure manner. Any separate claim of confidentiality must be substantiated and documented per the requirements of 45CSR31 and 45CSR31B and all information claimed confidential must be clearly identified on the "Declaration of Data Confidentiality" spreadsheet available on the SLEIS web page. Please be specific which fields you wish kept confidential. For example, reference each area where "process data" is considered confidential.

3.7 Multiple Facilities

SLEIS has the ability to accommodate anyone who must view/edit/submit/administer multiple facilities and has been assigned to those facilities. When logging into your SLEIS account, a pick list of all assigned facilities is presented. In addition, SLEIS lists available actions for each facility and the roles you have been assigned. To access a listed facility, click the appropriate action button. Enter the facility's data and make sure to save changes as you go. At any time, you can click the "My Facilities" button to see the facility pick list again. Save changes to the currently opened facility before clicking the my facilities button otherwise any unsaved changes will be discarded by SLEIS without warning. Always save changes before opening another facility.

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3.8 Shutdowns

Under the "Emission Units" button, the emission unit's operating status is provided. Three operating status options are available in the drop down menu; Operating, Permanently Shutdown, and Temporarily Shutdown. The "operating" option is selected when the emission unit operated and had emissions during the reporting year. However, there may be times when an emission unit is temporarily or permanently shutdown. When these status options are selected addition information/steps are required by SLEIS.

Temporarily shutdown emission units are those that did not operate or have emissions during the reporting year, but may continue to operate in future years. In these cases, the "temporarily shutdown" option in the "Status" field is selected. When selected, SLEIS also requires the "Status Date" field be completed. To avoid other potential system errors, it is recommended entering the first day of the following shutdown year. For example, if the facility was temporarily shutdown during 2014, then enter 2015-01-01. Additional information is also required under the "Unit

Processes" button for each emission unit's affected processes. In the "Last/Final Emissions Year" field, enter the last year emissions were reported (e.g. 2015 for the above example). The final step is to ensure the process rates, operating times, and pollutant emissions under the "Process Emissions" button are entered as zeros. This will keep the existing structure available for the next reporting period. If the "Process is Reported?" field box under the "Process" tab is unchecked, all data will be automatically removed and will require data re-entering in future years.

Permanently shutdown emission units are those that will cease operate and there is no intent to re-start operations in future years. The same generally process is followed as with temporarily shutdown units. Under the "Emissions Unit" button in the "Status" field, the operating status is selected as "permanently shutdown" and in the "Status" field the last operating date is enter as described in the example above. The final reporting year is entered in the "Last/Final Emission Year" field under the "Unit Processes" button. For each individual emission unit process under the "Process Emissions" button in the "Process" tab, uncheck the "Process is Reported?" field box to automatically remove all the process, operational, and emissions data.

3.9 De Minimis Emissions

Not all pollutants are equivalent. Each pollutant exhibits its own physical, chemical, and toxicity characteristics. In addition, some may be more specifically regulated than others. It is these factors that dictate how small the emissions must be reported in SLEIS. For example, at the same emission rate, methanol emissions are less toxic than dioxins.

The USEPA routinely models selected pollutant emissions based upon the information provided in SLEIS. If emissions are not provided in SLEIS, the USEPA will use other sources such as the SARA 313 TRI emissions or use their best professional judgment based on other available information. As a result, emission rates used may be conservatively high and could result in the unwarranted flagging of your facility as a potential threat to impacted areas downstream.

Therefore, specifying a single de minimis value becomes impractical and the DAQ cannot establish such a value. However, it is suggested that consideration be given when entering emission data as it relates to the specific pollutant's toxicity. For example, enter smaller emission rates for pollutants that are known carcinogens as compared to non-carcinogenic pollutants. Additionally, if there is a pollutant that is expected to be emitted (dioxins for example) at the same or similar type facility operation and it is not emitted from your facility, then it would be advisable to enter the pollutant with zero emissions as an indicator that the pollutant is not emitted. Placing a statement in the comment field that emissions are zero for a specific pollutant is an additional way to indicate the pollutant is not emitted.

4 Pollutants

SLEIS contains pre-designated pollutant codes for each pollutant. Many of these codes are the same as the pollutant's Chemical Abstracts Service (CAS) number. These codes do not allow the use of decimal points in the code name. For example, the code for 2.5 micron filterable particulate matter is listed as PM25-FIL and not PM2.5-FIL. Likewise, the hyphens used in the CAS number are not included in the pollutant code. Each pollutant category is further detailed below.

Please note some codes previously used in *i*-STEPS have been retired from the USEPA's code tables. During the data transfer from *i*-STEPS to SLEIS many of these codes were retained in the SLEIS database. Although these retired codes exist in SLEIS, new pollutant records cannot use these old codes. For various technical reasons, existing pollutant records having these old codes still remain available for updating. If you are using one of the older pollutant codes shown in ***Table C – Pollutant Code Changes***, such as PM10, VOCHAPS, or 10102439 (NO), etc., the DAQ requests that the new or appropriate pollutant code be substituted.

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4.1 Estimating Emissions

Air emissions can be estimated by a variety of methods and the accuracy of these methods can vary. Therefore, when estimating emissions the highest level of accuracy available should be used. From an accuracy hierarchical view, the preferred estimating methods from highest to lowest are listed below.

- Continuous Emission Monitoring Systems (CEMS)
- Stack/Performance Testing
- Material Balances
- Engineering Calculations/Process Simulations
- Emission Factors (e.g. AP-42)
- Best Guess

A counterpart to estimating emissions is determining an air pollutant control device's efficiency. The type of control device used and the pollutant being controlled greatly influences the control efficiency. Therefore, the type of control device used must be effective for the pollutant being emitted. For example, a baghouse works fine for particulate matter emissions, but is not effective at controlling VOC emissions. In some cases, a series of different control devices may be required. For example, a chlorinated organic gas stream is burned in a process thermal oxidizer to reduce VOC emissions and a scrubber after the oxidizer is used to control the hydrogen chloride emissions generated during the combustion process.

Like estimating emissions, there are a number of methods used to determine a control device's efficiency. The methods shown below are also hierarchical from the most accurate to the least.

- Stack/Performance Testing
- Material Balances
- Manufacturer/Vendor Guarantee
- Engineering Calculations/Process Simulations

- Emission Factors with Control Efficiency Included (e.g. AP-42)
- Best Guess

4.2 Reportable Pollutants

The following table shows the major pollutants categories and pollutant codes used in the air emission inventory.

Pollutant	Code(s)
Criteria Pollutants and Precursors	
Particulate Matter	PM-FIL, PM10-FIL, PM25-FIL, and PM-CON
Sulfur Dioxide	SO2
Nitrogen Oxides	NOX
Carbon Monoxide	CO
Volatile Organic Compounds	VOC (reportable as a group)
Lead	7439921
Ammonia	NH3
Other Title V Reportable Pollutants	
Reduced Sulfur Compounds	TRS (reportable as a group)
Class I and II Compounds	CFC (reportable as a group)
Hazardous Air Pollutants	
187 Substances	Reported individually and/or in speciated groups. See Tables A and B.

4.3 Criteria Pollutants

These pollutants bear the name “criteria” because the National Ambient Air Quality Standards (NAAQS) promulgated for these pollutants are based on USEPA’s health and welfare “criteria” documents. Each pollutant is further discussed below.

4.3.1 Particulate Matter (PM)

Particulate matter is identified in two different categories; filterable and condensable. The easiest way to visualize these categories is to imagine a stack testing sampling train where exhaust gas first passed through a filter material and then through a condenser. Material captured on the filter is called “filterable particulate matter”. Any material passing through the filter and captured by the condenser is called “condensable particulate matter”.

Condensable particulate matter is typically present as a gas in stacks operating at an elevated temperature and condenses into sub-micron liquid or solid particles when cooled to ambient conditions at the stack's exit. Condensable particulate matter may be present any time the stack's temperature is greater than ambient temperature, but most notably in stacks from combustion processes. With the exception of flue gas desulfurization (FGD), most air pollution control devices designed to control particulates do not control condensable particulate matter emissions. As a result, condensable particulate matter emissions can easily out-weigh the filterable particulate matter emissions at the stack's exit.

Currently there are three filterable particulate matter particle size ranges used in the emission inventory; suspended particulate matter (30 microns or less), respirable particulate matter (10 microns or less), and fine particulate matter (2.5 microns or less). Smaller micron particles are a subset of the larger sized particles. These filterable particle sizes, and the condensable fraction, are typically determined by weighing the different size fractions from samples collected during a stack test. USEPA's Compilation of Air Pollutant Emission Factors (AP-42) contains the particle size distribution and associated particulate matter emission factors for many operations. A link to the AP-42 emission factors webpage can be found in ***Table F – Webpage and Email Summary List***.

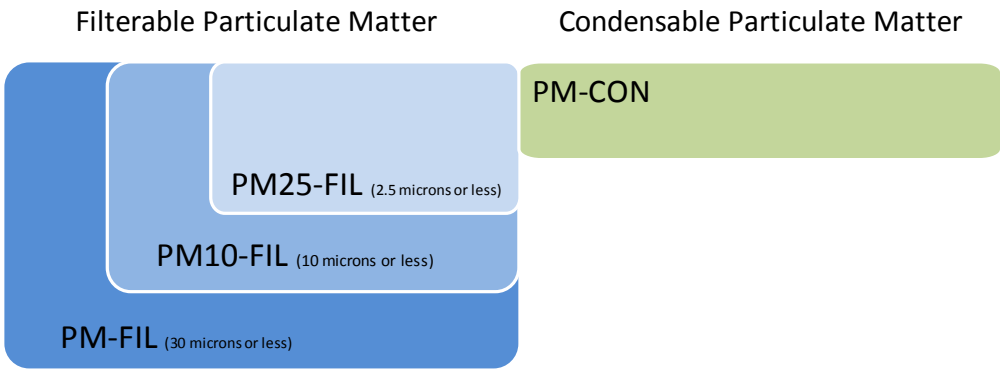
In the past, the DAQ has seen inconsistent use of emission factors and wide-spread problems regarding particulate matter reporting, which weakens data reliability. As requested in previous inventories, the DAQ is requesting continued special attention be paid to reporting particulate matter emissions. With very limited exception, use the filterable particulate matter and condensable particulate matter emissions codes shown in the below table. Please **do not** report primary particulate matter emissions (PM-PRI), filterable and condensable emissions added together, unless you also report both the condensable and filterable fractions. This is extremely important for facilities having combustion sources, primary metals production processes, or secondary metals production processes.

Preferred Codes:

Code	Represents
PM-FIL	PM_{30} Filterable Emissions (< 30 micron)
PM10-FIL	PM_{10} Filterable Emissions (< 10 micron)
PM25-FIL	$PM_{2.5}$ Filterable Emissions (< 2.5 micron)
PM-CON	Condensable Particulate Emissions (no size distinction)

For all sources emitting particulate matter at elevated temperatures (such as combustion and primary/secondary metals production facilities), report the emission rates for all four particulate matter values shown in the above table. If not operating one of these processes and the PM-CON emissions cannot be estimated, only report the three filterable ranges.

As previously mentioned, smaller micron particles are subsets of the bigger particle sizes. Therefore, if reporting PM25-FIL emissions, also report PM10-FIL emissions. Please note the PM10-FIL emission rate must be greater than or equal to the PM25-FIL emission rate. Likewise, if reporting PM10-FIL emissions, also report the process's PM-FIL emissions. Again, the PM-FIL emission rate must be greater than or equal to the PM10-FIL emission rate. Total particulate matter emissions will not be double or triple counted. Condensable particulate matter (PM-CON) is separate from the filterable particulate matter. A presentation entitled "Filterable and Condensable PM" located on the DAQ's Emission Inventory webpage further discusses particulate matter emissions. The diagram below illustrates the various particulate matter types and their relationship with each other.



Particulate matter emissions can be calculated using USEPA AP-42 emission factors. However, if available, other more reliable estimating methods such as stack test data or vendor control device design guarantees is preferred over using AP-42 emission factors.

If conducting a stack test for condensable particulate matter (PM-CON), note in 2010 the USEPA updated their Reference Method 202. Facility specific PM-CON emission factors derived from stack tests performed using the new Reference Method 202 are preferred. When PM-CON test data is not available, additional guidance is available on the DAQ's Emission Inventory web page. The document entitled "Emissions Factors for Condensable Particulate Matter Emissions from Electric Generating Units" was prepared by the DAQ's regional planning organization, Mid-Atlantic Regional Air Management Association (MARAMA), to provide better PM-CON emission factors. Although it was intended to provide emission factors for PM-CON emitted from electric generating units, these factors correspond to industrial boiler factors in AP-42 and may be used for industrial boiler emission estimates. A copy of the MARAMA EGU emission factors are summarized in the table below.

Summary of CPM Emissions Factors by SCC (6-digit)		
SCC (6-digit)	**SCC (6-digit) Description**	**Average CPM Emissions Factor (lb/MMBtu)**
1-01-001	Boiler / EGU / Anthracite Coal	0.0084
1-01-002 – all tests	Boiler / EGU /Bituminous/Subbituminous Coal	0.022
1-01-002 (purged only)	Boiler / EGU /Bituminous/Subbituminous Coal	0.013
1-01-003 – all tests	Boiler / EGU / Lignite	0.039
1-01-005 – all tests	Boiler / EGU / Fuel Oil	0.014
1-01-006 – all tests	Boiler / EGU / Natural Gas	0.00249
1-01-008 – all tests	Boiler / EGU / Petroleum Coke	0.05
2-01-001– all tests	Internal Combustion Engine / EGU/Fuel Oil	0.013
2-01-001 (purged only)	Internal Combustion Engine / EGU/Fuel Oil	0.010
2-01-002 – all tests	Internal Combustion Engine / EGU/Natural Gas	0.005
2-01-002 (purged only)	Internal Combustion Engine / EGU/Natural Gas	0.0015

If PM stack tests, MARAMA emission factors, or AP-42 emission factors are not available for the particulate matter type or emission unit and control device configuration used at your facility, filterable particulate matter emission rates can be estimated from the USEPA's "PM Calculator". The calculator provides a method to convert PM-FIL emissions into PM10-FIL and PM25-FIL and provides some guidance on estimating PM-CON emissions. This calculator can be downloaded from the USEPA's CHIEF webpage located at http://www.epa.gov/ttn/chief/eiinformation.html. The calculator is the last bullet under the "Emission Inventory Tools" group located near the bottom of the page in the right-hand column.

The PM Calculator uses uncontrolled (pre-control) PM-FIL as its starting point. Uncontrolled emissions are normally not sampled during stack tests, but uncontrolled PM-FIL emission factors are available in AP-42 and can be used as a starting point.

To illustrate the emission calculations for different types of particulate matter, an example calculation is provided below using the USEPA AP-42 emission factors.

Example PM Calculation:

Basis:

A large industrial dry bottom wall-fired pulverized coal boiler using an electrostatic precipitator for PM control and burning bituminous coal. During the reporting year, the boiler burned 30,000 tons coal containing 2% sulfur and 11% ash. Particulate matter emissions are estimated using AP-42, Tables 1.1-5 and 1.1-6.

PM25-FIL Calculation:

The AP-42 controlled PM25-FIL emission factor using an electrostatic precipitator is:

= 0.024A (lb per ton of coal burned)

- Where A is the coal's ash weight percent as fired.

PM25-FIL emission rate is calculated as follows:

= 0.024(11%) x 30,000 tons/yr ÷ 2,000 lb/ton = **3.96 tons** PM25-FIL emitted

Report this PM25-FIL value in SLEIS.

PM10-FIL Calculation:

The AP-42 controlled PM10-FIL emission factor using an electrostatic precipitator is:

= 0.054A (lb per ton of coal burned)

- Where A is the coal's ash weight percent as fired.

PM10-FIL emission rate is calculated as follows:

= 0.054(11%) x 30,000 tons/yr ÷ 2,000 lb/ton = **8.91 tons** PM10-FIL emitted

Report this PM10-FIL value in SLEIS.

PM-FIL Calculation:

The AP-42 controlled PM-FIL emission factor using an electrostatic precipitator is:

= 0.08A (lb per ton of coal burned)

- Where A is the coal's ash weight percent as fired.

PM-FIL emission rate is calculated as follows:

= 0.08(11%) x 30,000 tons/yr ÷ 2,000 lb/ton = **13.2 tons** PM-FIL emitted

Report this PM-FIL value in SLEIS.

PM-CON Calculation:

The AP-42 PM-CON emission factor without FGD controls is:

= 0.1S - 0.03 (lb per MMBtu of coal burned)

- Where S is the coal's sulfur weight percent as fired. Not ash as previous used.
- Per AP-42 note e, to convert lb/ton multiply by 26 MMBtu/ton.
- Outside of SOx control devices, most air pollution control devices have no effect on PM-CON emissions.

PM-CON emission rate is calculated as follows:

= (0.1(2%) - 0.03) x 26 MMBtu/ton x 30,000 tons/yr ÷ 2,000 lb/ton

= **66.3 tons** PM-CON emitted

Report this PM-CON value in SLEIS.

4.3.2 Ozone Precursors

Ozone is a criteria pollutant; however, ozone is not reported in SLEIS. Instead, the ozone precursor pollutants CO, NOX, and VOC are reported. VOCs are often considered any organic compound. Generally this is true; however, this is not a completely accurate definition. A complete VOC definition is available at 40 CFR 51.100(s), which identifies compounds that are not VOCs. When reporting VOC total emissions, be sure not to include non-VOC compounds.

4.3.3 Lead Compounds

Lead has the unique distinction being both a criteria pollutant and a hazardous air pollutant (HAP). Since many HAP metals no longer require speciation, only report the compound's lead ion instead of the entire lead compound. For example, if lead oxide (PbO) is emitted, only report the lead emissions in the compound as Pb (pollutant code 7439921). Below is an example calculation to determine the lead only emissions. This calculation method can also be used for other metal compounds.

Example Lead Calculation:

Basis:

A coal-fired boiler emits 500 lb/yr lead monoxide (PbO). Lead monoxide has a molecular weight (MW) of 223 lb/lbmole. Lead's (Pb) MW is 207 lb/lbmole and oxygen's (O) MW is 16 lb/lbmole.

Lead Calculation:

Determine the percent lead in lead monoxide:

Percent lead = (207 lb Pb/lbmole ÷ 223 lb PbO/lbmole) x 100

= 92.8% Pb

Determine lead emissions:

Lead emissions = 500 lb PbO x 92.8% Pb ÷ 100

= 464 lb Pb

= 464 lb Pb ÷ 2,000 lb/ton

= **0.23 tons** Pb (pollutant code 7439921)

Report this lead value in SLEIS.

If the lead compound is also classified as VOC or particulate matter, then the entire lead compound's emissions would also be reported in the VOC or particulate matter total emissions.

4.3.4 Ammonia

Ammonia (NH3) is a fine particulate matter ($PM_{2.5}$) precursor and is used in a variety of industries. Historically, ammonia has been largely underemphasized as a pollutant. This is mainly because it is not defined as a VOC. However, with the USEPA's increased emphasis on $PM_{2.5}$ emissions and designation of $PM_{2.5}$ non-attainment areas, states are requiring ammonia emissions in annual air emission inventories to better address $PM_{2.5}$ issues and to develop appropriate State Implementation

Plans (SIP). Therefore, ammonia must be reported in the SLEIS inventory.

4.4 Hazardous Air Pollutants (HAPs)

The Clean Air Act contains a specific list of hazardous air pollutants (HAPs) and specifies several HAPs "groups" that often include large numbers (thousands) of individual compounds. Therefore, the DAQ tables in this SLEIS reporting guidance document cannot be all inclusive of each group's compounds. For metals compounds, the groups are also defined to include the unreacted or elemental metal itself (e.g. lead metal).

Currently, there are 187 compounds defined as HAPs listed by the USEPA under section 112(b) of the 1990 Clean Air Act Amendments. A detailed HAPs list is provided below in Tables A – C, which contains the individual and group pollutant codes used in SLEIS**.** Methyl ethyl ketone (MEK) and caprolactam are no longer considered HAPs, but continue to be regulated as a VOC. Therefore, these two compounds are included in the VOC total emissions, but not as a separate pollutants.

Facilities are required to submit information on all HAPs emitted. Some HAPs groups require speciation (reporting of individual HAP compounds within groups). If the facility is unable to provide speciated HAPs data, USEPA will speciate the data themselves using default speciation profiles derived from a wide number of sources.

A HAPs group pollutant code represents the total emissions from all the individual HAP compounds within that group. If a pollutant within a HAPs group does not have a specific pollutant code in SLEIS, the pollutant's emission rate must still be aggregated and reported with all the other pollutants in the HAPs group.

For most HAPs groups, do not include in SLEIS both the aggregated HAPs group emissions and the speciated compound's emission rate in the same process. More information on specific groups is discussed below in the later sections.

4.4.1 VOC or Particulate Matter HAPs

Many HAP compound emissions are also reportable as VOC (e.g. methanol) or particulate matter (e.g. HCl). Emissions of these compounds must be reported both as an individual HAP and included in the VOC or particulate matter total emissions. Conversely, some HAPs are not defined as either a VOC or particulate matter (e.g. chlorine). Two examples are provided below to explain these concepts.

HAP Example 1:

A process emits 10 tons of benzene (which is both a VOC and a HAP), and 10 tons of ethanol (which is a VOC, but is not a HAP). Emissions reported in SLEIS are 10 tons of benzene (pollutant code 71432) and 20 tons of VOC (pollutant code VOC). Although benzene is reported as an individual HAP, it must also be reported in the VOC total emissions.

Non-HAP VOCs with or without a pollutant code in SLEIS, such as ethanol in the above example, need not be reported separately and can be reported as part of the larger VOC category. If a facility wishes to provide more detail and report individual non-HAP VOC emissions, it may do so assuming that an appropriate pollutant code is available in SLEIS. If a pollutant code is not available and a speciated non-HAP pollutant must be reported, the DAQ can add a pollutant in SLEIS. However, since it will not pass their automated QA edit checks, the added pollutant will not be reported to the USEPA.

HAP Example 2:

A process emits 10 tons of methylene chloride (which is a HAP, but not a VOC), 10 tons of cellosolve and 10 tons of methyl cellosolve (which are both HAPs in the "glycol ethers" group and VOCs). Emissions reported in SLEIS are 10 tons of methylene chloride (pollutant code 75092), 20 tons of glycol ethers (pollutant code 171), and 20 tons of VOC (pollutant code VOC).

Since the DAQ is currently not requiring HAPs in the "glycol ethers" group to be speciated, cellosolve and methyl cellosolve are not reported as individual chemicals. For a list of individual "glycol ether" pollutant codes, see ***Table B – Individual HAPs within HAPs Group*** below.

4.5 Metal and Other Compound Groups

With very few exceptions (e.g. chromium and nickel), the USEPA does not want the HAP metal compounds identified; they only want the emissions based on the weight of the HAP metal ion.

For the HAP metals group, the USEPA informed states the metal ion emission and not the metal compound total emissions is the data needed. With very few exceptions (e.g. chromium and nickel), the USEPA does not want the HAP metal compounds identified; they only want the emissions based on the weight of the HAP metal ion. This approach is consistent with USEPA's modeling and risk calculations. Also, the intent is to simplify emission calculations, because in many cases stack test analysis only provides data for the ion instead of the entire compound.

As a result, extraneous HAP metal compound pollutant codes have been removed from SLEIS. Therefore, calculate the metal ion emissions instead of the individual metal compounds emissions for antimony, arsenic, beryllium, cadmium, cobalt, lead, manganese, mercury, and selenium. Exceptions to this rule are chromium and nickel compounds, which are further discussed below.

In the unusual circumstance a HAP metal is part of an organometallic compound not excluded from the definition of VOC in 40 CFR 51.100(s), calculate the emissions using the compound's entire weight and include these emissions in the process's VOC total emissions. Likewise, if the HAP metal is also particulate matter, these calculated emissions must be included in the process's total particulate matter emissions. Also, calculate the metal ion emission using only the weight of metal ion being reported and report these emissions with the appropriate HAP metal pollutant code. An example calculation is provided in Section ***4.2.3 – Lead Compounds***. In addition, a conversion table used to estimate the metal ion fraction of a metal compound can be found in ***Table E – Metal Ion Conversion Table.***

4.5.1 Chromium Compounds

Chromium has five possible pollutant codes. Pick the pollutant code(s) best describing the chromium emission being reported. For risk analysis purposes, it is most important to determine if hexavalent chromium is being emitted. The appropriate pollutant codes for hexavalent chromium are chromic acid (7738945), chromium trioxide (1333820), or the chromium VI ion (18540299). Calculate and report as many of these chromium emission codes as necessary. If the chromium being reported is not hexavalent chromium, report it as trivalent chromium III ion (16065831).

In lieu of reporting trivalent and hexavalent chromium ions separately, another option is to combine them and report the total as chromium ion (7440473) with an unspecified valence state. If choosing this option, include all chromium ion emissions in the 7440473 total and do not report any other chromium emission codes from the process.

4.5.2 Nickel Compounds

For nickel compounds, report emissions using the appropriate pollutant code for nickel oxide (1313991), nickel refinery dust (604), and nickel subsulfide (12035722). If reporting these compounds, report the emissions calculated using the compound's total weight. For any other

nickel compounds, only calculate the nickel ion emission and report it as nickel (7440020). Calculate and report as many of these nickel emission codes as necessary for each process.

4.5.3 Cyanide Compounds (Nitriles)

Although not strictly a metal ion, cyanide compound emissions are calculated similarly. Unless the cyanide compound is hydrogen cyanide, calculate and report only the cyanide ion (57125) emissions. If the emissions are hydrogen cyanide, calculate and report hydrogen cyanide (74908) emissions using the compound's total weight. Since cyanide compounds contain carbon and are defined as a VOC, also include hydrogen cyanide emissions in the process's VOC total emissions.

4.5.4 Coke Oven Emissions

Under the coke oven group, the DAQ no longer uses pollutant code 141 for benzene soluble organics or pollutant code 142 for methylene chloride soluble organics. Report these pollutants using pollutant code 140 for coke oven emissions. Coal tar pitch volatile emissions are still reported as pollutant code 8007452. More information on coal tar and extractable organic matter is further discussed below regarding emission reporting for POM/PAHs (polycyclic organic matter / polycyclic aromatic hydrocarbons).

4.5.5 Glycol Ethers

The glycol ethers compound group (pollutant code 171) is enormous containing approximately 4,500 different compounds. However, only a few are commonly used in SLEIS. These compounds are not expected to pose the health impacts associated with other HAP compound groups; therefore, the DAQ is currently not requiring specific pollutant emissions within the glycol ether compound group to be speciated. However, if a facility wishes to report individual compounds, it may do so assuming an appropriate pollutant code is available in SLEIS. See ***Table B – Individual HAPs within HAPs Groups*** below for a list of available glycol ether pollutant codes.

On November 29, 2004, the USEPA deleted ethylene glycol mono butyl ether (CAS Number 111-76-2) from the list of hazardous air pollutants. Although ethylene glycol mono butyl ether is defined as a glycol ether, do not included this compound's emissions in the glycol ether group's total emissions. However, like all other glycol ethers, ethylene glycol mono butyl ether is a VOC and must be included in process's VOC total emissions.

4.6 Single or Aggregate Reporting

When reporting one of the eight HAPs groups listed below, use either the HAPs group's pollutant codes or the individual HAP pollutant code associated with that HAPs group, but not a combination of both for the same process.

Some HAPs can be reported either as an individual compound or as the aggregate HAPs group. When reporting one of the eight HAPs groups listed below, use either the HAPs group's pollutant codes or the individual HAP pollutant code associated with that HAPs group, but not a combination of both for the same process. Compounds in the groups discussed below may also be defined as a VOC or particulate matter. Therefore, if applicable, also report both the HAP and include the compound's emissions in the VOC or particulate matter total emission as appropriate.

Cresols:

The individual pollutants in the cresols mixed isomers group are o-cresol (95487), m-cresol (108394), and p-cresol (106445). Report either the process's individual cresol emissions or report emissions using the cresols mixed isomers group's pollutant code 1319773. The cresol mixed isomers group includes any or all cresol isomers, cresol isomer mixtures, and/or cresylic acid. Since cresols are also VOCs, also include cresol emissions in the VOC total emissions.

Dioxins/Furans:

The acceptable dioxins/furans group pollutant code is 628 (dioxins/furans as 2,3,7,8-TCDD TEQs (WHO2005)). Use the group pollutant code for reporting aggregated dioxins/furans emissions or the dioxins/furans group's individual pollutant codes. These pollutant emissions must also be included in the VOC total emissions.

Fine Mineral Fibers:

For fine mineral fibers having an average diameter less than or equal to one micron, use either the mineral fibers group's pollutant code 383 or report emissions using the specific pollutant codes for man-made ceramic fibers (608), man-made glasswool fibers (613), man-made slagwool fibers (616), and man-made rockwool fibers (617). These pollutants are also defined as particulate matter; therefore, also include these emissions in the appropriate particulate matter total emissions.

Glycol Ethers:

For glycol ethers, use the glycol ethers group pollutant code 171 or one of the listed speciated pollutant codes. See the earlier discussion in Section **4.4.5 – Glycol Ethers** regarding glycol ethers and the November 29, 2004 deletion of ethylene glycol mono butyl ether (CAS Number 111-76-2) from the list of hazardous air pollutants. These emissions must also be included in the VOC total emissions.

PCBs:

If reporting PCBs, use either the catch-all pollutant code 1336363 for polychlorinated biphenyls or one of the 10 acceptable PCB emission codes. These pollutant's emissions are also included in the VOC total emissions.

POM/PAHs:

For POM/PAHs (polycyclic organic matter/polycyclic aromatic hydrocarbons), use the appropriate group pollutant code for "PAH, total", "PAH/POM - Unspecified", "coal tar" and "EOM (extractable organic matter)" or use one of the 50 specific PAH pollutant codes. Please note 7-

PAH has been retired. These pollutants are also defined as VOC and must be included in the VOC total emissions.

Radionuclides:

For radionuclides, use either the radionuclides (including radon) pollutant code 605 or one of the 10 acceptable radionuclide pollutant codes for any atom that spontaneously undergoes radioactive decay.

Xylenes:

Either report the process's individual pollutants o-xylene (95476), m-xylene (108383) and p-xylene (106423) or report the aggregated xylenes group emissions using pollutant code 1330207. These pollutants are also defined as VOC and must be included in the VOC total emissions.

5 Supporting Tables

The following tables are provided to assist with the identification of the HAP pollutant codes used in SLEIS in addition to summarizing the webpages and email addresses used in this document.

Table A: includes the USEPA's first 170 listed HAPs and their associated CAS numbers, which is the same as the pollutant code. Also, a "Certified Emission Statement (CES) HAP Category" has been added showing whether the HAP is listed as a Column A Particulate, Column B VOC, or Column C Neither on the annual Certified Emissions Statement Invoice.

Table B: includes individual pollutant codes for the HAPs groups. The pollutant codes are consistent with the USEPA's National Emissions Inventory (NEI) database. Also, a "Certified Emission Statement (CES) HAP Category" has been added showing whether the HAP is listed as a Column A Particulate, Column B VOC, or Column C Neither on the annual Certified Emissions Statement Invoice.

Table C: includes pollutant codes previously used in reporting facilities inventories but have been changed with recent code updates. These updates include errors corrected in the original table or changes made to be compatible with the NEI database. If any of the listed "old codes" were used in previous emission inventory reports, please replace them with the "new codes" or a more appropriate code in Tables A through B.

Table D: is the current USEPA approved control device code list.

Table E: provides for common metal compound pollutants the metal ion fraction used in calculating the metal ion emissions.

Table F: is a summary list of webpage and email addresses used in this guidance document.

Table A – HAPs Pollutant Codes:

CAS/Pollutant Code	Pollutant	CES HAP Category
75070	Acetaldehyde	VOC
60355	Acetamide	VOC
75058	Acetonitrile	VOC
98862	Acetophenone	VOC
53963	2-Acetylaminofluorene	VOC
107028	Acrolein	VOC
79061	Acrylamide	VOC
79107	Acrylic Acid	VOC
107131	Acrylonitrile	VOC
107051	Allyl Chloride	VOC
92671	4-Aminobiphenyl	VOC
62533	Aniline	VOC
90040	2-Anisidine (o-Anisidine)	VOC
1332214	Asbestos	Particulate
71432	Benzene (including benzene from gasoline)	VOC
92875	Benzidine	VOC
98077	Benzotrichloride	VOC
100447	Benzyl Chloride	VOC
92524	Biphenyl	VOC
117817	bis(2-Ethylhexyl)Phthalate (DEHP)	VOC
542881	bis(Chloromethyl) Ether	VOC
75252	Bromoform	VOC
106990	1,3-Butadiene	VOC
156627	Calcium Cyanamide	VOC
133062	Captan	VOC
63252	Carbaryl	VOC
75150	Carbon Disulfide	VOC
56235	Carbon Tetrachloride	VOC
463581	Carbonyl Sulfide	VOC
120809	Catechol	VOC

Table A – HAPs Pollutant Codes:

CAS/Pollutant Code	Pollutant	CES HAP Category
133904	3-Amino-2,5-Dichlorobenzoic Acid (Chloramben)	VOC
57749	Chlordane	VOC
7782505	Chlorine	Neither
79118	Chloroacetic Acid	VOC
532274	2-Chloroacetophenone	VOC
108907	Chlorobenzene	VOC
510156	Chlorobenzilate	VOC
67663	Chloroform	VOC
107302	Chloromethyl Methyl Ether	VOC
126998	Chloroprene	VOC
1319773	Cresols (mixed isomers)	VOC
95487	o-Cresol	VOC
108394	m-Cresol	VOC
106445	p-Cresol	VOC
98828	Cumene	VOC
94757	2,4-D (2,4-Dichlorophenoxyacetic Acid)(including salts and esters)	VOC
72559	DDE (1,1-Dichloro-2,2-bis(p-Chlorophenyl) Ethylene)	VOC
334883	Diazomethane	VOC
132649	Dibenzofuran	VOC
96128	1,2-Dibromo -3-Chloropropane	VOC
84742	Dibutyl Phthalate	VOC
106467	1,4-Dichlorobenzene	VOC
91941	3,3'-Dichlorobenzidine	VOC
111444	Dichloroethyl Ether (bis[2-Chloroethyl]Ether)	VOC
542756	1,3-Dichloropropene	VOC
62737	Dichlorvos	VOC
111422	Diethanolamine	VOC
121697	N,N-Dimethylaniline	VOC
64675	Diethyl Sulfate	VOC
119904	3,3'-Dimethoxybenzidine	VOC
60117	4-Dimethylaminoazobenzene	VOC
119937	3,3'-Dimethylbenzidine	VOC
79447	Dimethylcarbamoyl Chloride	VOC
68122	N,N-Dimethylformamide	VOC
57147	1,1-Dimethylhydrazine	VOC
131113	Dimethyl Phthalate	VOC
77781	Dimethyl Sulfate	VOC
534521	4,6-Dinitro-o-Cresol (including salts)	VOC
51285	2,4-Dinitrophenol	VOC
121142	2,4-Dinitrotoluene	VOC
123911	1,4-Dioxane	VOC
122667	1,2-Diphenylhydrazine	VOC
106898	Epichlorohydrin (1-Chloro-2,3-Epoxypropane)	VOC
106887	1,2-Epoxybutane	VOC
140885	Ethyl Acrylate	VOC
100414	Ethylbenzene	VOC
51796	Ethyl Carbamate (Urethane)	VOC
75003	Ethyl Chloride	VOC
106934	Ethylene Dibromide (Dibromoethane)	VOC

Table A – HAPs Pollutant Codes:

CAS/Pollutant Code	Pollutant	CES HAP Category
107062	Ethylene Dichloride (1,2-Dichloroethane)	VOC
107211	Ethylene Glycol	VOC
151564	Ethyleneimine (Aziridine)	VOC
75218	Ethylene Oxide	VOC
96457	Ethylene Thiourea	VOC
75343	Ethylidene Dichloride (1,1-Dichloroethane)	VOC
50000	Formaldehyde	VOC
76448	Heptachlor	VOC
118741	Hexachlorobenzene	VOC
87683	Hexachloro-1,3-Butadiene	VOC
77474	Hexachlorocyclopentadiene	VOC
67721	Hexachloroethane	VOC
822060	Hexamethylene-1,6-Diisocyanate	VOC
680319	Hexamethylphosphoramide	VOC
110543	Hexane	VOC
302012	Hydrazine	Neither
7647010	Hydrochloric Acid (Hydrogen Chloride)	Neither
7664393	Hydrogen Fluoride (Hydrofluoric Acid)	Neither
123319	Hydroquinone	VOC
78591	Isophorone	VOC
58899	1,2,3,4,5,6-Hexachlorocyclohexane (all stereo isomers, including Lindane)	VOC
108316	Maleic Anhydride	VOC
67561	Methanol	VOC
72435	Methoxychlor	VOC
74839	Methyl Bromide (Bromomethane)	VOC
74873	Methyl Chloride (Chloromethane)	VOC
71556	Methyl Chloroform (1,1,1-Trichloroethane)	Neither
60344	Methylhydrazine	VOC
74884	Methyl Iodide (Iodomethane)	VOC
108101	Methyl Isobutyl Ketone (Hexone)	VOC
624839	Methyl Isocyanate	VOC
80626	Methyl Methacrylate	VOC
1634044	Methyl tert-Butyl Ether	VOC
101144	4,4'-Methylenebis(2-Chloroaniline)	VOC
75092	Methylene Chloride (Dichloromethane)	Neither
101688	4,4'-Methylenediphenyl Diisocyanate (MDI)	VOC
101779	4,4'-Methylenedianiline	VOC
91203	Naphthalene	VOC
98953	Nitrobenzene	VOC
92933	4-Nitrobiphenyl	VOC
100027	4-Nitrophenol	VOC
79469	2-Nitropropane	VOC
684935	N-Nitroso-N-Methylurea	VOC
62759	N-Nitrosodimethylamine	VOC
59892	N-Nitrosomorpholine	VOC
56382	Parathion	VOC
82688	Pentachloronitrobenzene (Quintobenzene)	VOC
87865	Pentachlorophenol	VOC

Table A – HAPs Pollutant Codes:

CAS/Pollutant Code	Pollutant	CES HAP Category
108952	Phenol	VOC
106503	p-Phenylenediamine	VOC
75445	Phosgene	VOC
7803512	Phosphine	VOC
7723140	Phosphorus (yellow or white)	VOC
85449	Phthalic Anhydride	VOC
1336363	Polychlorinated Biphenyls (Aroclors)	VOC
1120714	1,3-Propane Sultone	VOC
57578	beta-Propiolactone	VOC
123386	Propionaldehyde	VOC
114261	Propoxur (Baygon)	VOC
78875	Propylene Dichloride (1,2-Dichloropropane)	VOC
75569	Propylene Oxide	VOC
75558	1,2-Propylenimine (2-Methylaziridine)	VOC
91225	Quinoline	VOC
106514	Quinone (p-Benzoquinone)	VOC
100425	Styrene	VOC
96093	Styrene Oxide	VOC
1746016	2,3,7,8-Tetrachlorodibenzo-p-Dioxin	VOC
79345	1,1,2,2-Tetrachloroethane	VOC
127184	Tetrachloroethylene (Perchloroethylene)	Neither
7550450	Titanium Tetrachloride	Particulate
108883	Toluene	VOC
95807	2,4-Toluenediamine	VOC
584849	2,4-Toluene Diisocyanate	VOC
95534	o-Toluidine	VOC
8001352	Toxaphene (Chlorinated Camphene)	VOC
120821	1,2,4-Trichlorobenzene	VOC
79005	1,1,2-Trichloroethane	VOC
79016	Trichloroethylene	VOC
95954	2,4,5-Trichlorophenol	VOC
88062	2,4,6-Trichlorophenol	VOC
121448	Triethylamine	VOC
1582098	Trifluralin	VOC
540841	2,2,4-Trimethylpentane	VOC
108054	Vinyl Acetate	VOC
593602	Vinyl Bromide	VOC
75014	Vinyl Chloride	VOC
75354	Vinylidene Chloride (1,1-Dichloroethylene)	VOC
1330207	Xylene (mixed isomers)	VOC
95476	o-Xylene	VOC
108383	m-Xylene	VOC
106423	p-Xylene	VOC

Table B – Individual HAPs within HAPs Group:

Pollutant Code	Pollutant	CES HAP Category
Antimony Compounds		
7440360	Antimony	Particulate
Arsenic Compounds (inorganic including arsine)		
7440382	Arsenic	Particulate
Beryllium Compounds		
7440417	Beryllium	Particulate
Cadmium Compounds		
7440439	Cadmium	Particulate
Chromium Compounds		
	Trivalent and other	
7440473	Chromium	Particulate
16065831	Chromium III	Particulate
	Hexavalent	
7738945	Chromic Acid	Particulate
1333820	Chromium Trioxide	Particulate
18540299	Chromium (VI)	Particulate
Cobalt Compounds		
7440484	Cobalt	Particulate
Coke Oven Emissions		
140	Coke Oven Emissions	VOC
Cyanide Compounds		
57125	Cyanide	Particulate
74908	Hydrogen Cyanide	Particulate
Glycol Ethers		
171	Glycol Ethers	VOC
110714	1,2-Dimethoxyethane	VOC
23436193	1-Isobutoxy-2-Propanol	VOC
120558	2,2'-Oxybisdibenzoate Ethanol	VOC
112254	2-(Hexyloxy) Ethanol	VOC
112072	2-Butoxyethyl Acetate	VOC
20706256	2-Propoxyethyl Acetate	VOC
112367	Bis(2-Ethoxyethyl) Ether	VOC
124174	Butyl Carbitol Acetate	VOC
112152	Carbitol Acetate	VOC
111159	Cellosolve Acetate	VOC
110805	Cellosolve Solvent	VOC
16672392	Di(Ethylene Glycol Monobutyl Ether) Phthalate	VOC
4206615	Diethylene Glycol Diglycidyl Ether	VOC
111966	Diethylene Glycol Dimethyl Ether	VOC
693210	Diethylene Glycol Dinitrate	VOC
764998	Diethylene Glycol Divinyl Ether	VOC
10143530	Diethylene Glycol Ethylvinyl Ether	VOC
1002671	Diethylene Glycol Ethyl Methyl Ether	VOC
10143541	Diethylene Glycol Mono-2-Cyanoethyl Ether	VOC
10143563	Diethylene Glycol-Mono-2-Methyl-Pentyl Ether	VOC
112345	Diethylene Glycol Monobutyl Ether	VOC
111900	Diethylene Glycol Monoethyl Ether	VOC
18912806	Diethylene Glycol Monoisobutyl Ether	VOC

Table B – Individual HAPs within HAPs Group:

Pollutant Code	Pollutant	CES HAP Category
111773	Diethylene Glycol Monomethyl Ether	VOC
929373	Diethylene Glycol Monovinyl Ether	VOC
3775857	Ethylene Glycol Bis(2,3-Epoxy-2-Methylpropyl)	VOC
7529273	Ethylene Glycol Diallyl Ether	VOC
629141	Ethylene Glycol Diethyl Ether	VOC
109864	Ethylene Glycol Methyl Ether	VOC
10137981	Ethylene Glycol Mono-2,6,8-Trimethyl-4-Nonyl Ether	VOC
10137969	Ethylene Glycol Mono-2-Methylpentyl Ether	VOC
662082	Ethylene Glycol Monobenzyl Ether	VOC
110496	Ethylene Glycol Monomethyl Ether Acetate	VOC
23495127	Ethylene Glycol Monophenyl Ether Propionate	VOC
764487	Ethylene Glycol Monovinyl Ether	VOC
7795917	Ethylene Glycol Mono-sec-Butyl Ether	VOC
67425	Ethylenebis(Oxyethylenenitrilo) Tetraacetic Acid	VOC
27310210	2-(2,4-Hexadienyloxy)ethanol	VOC
4439241	Isobutyl Cellosolve	VOC
111104	Methoxyethyl Oleate	VOC
112356	Methoxytriglycol	VOC
140056	Methyl Cellosolve Acetylricinoleate	VOC
3121617	Methyl Cellosolve Acrylate	VOC
112594	N-Hexyl Carbitol	VOC
122996	Phenyl Cellosolve	VOC
2807309	Propyl Cellosolve	VOC
10215335	Propylene Glycol Monobutyl Ether	VOC
1589497	Propylene Glycol Methyl Ether Acetate	VOC
112276	Triethylene Glycol	VOC
112492	Triethylene Glycol Dimethyl Ether	VOC
112505	Triethylene glycol monoethyl ether	VOC
143226	Triglycol Monobutyl Ether	VOC
Lead Compounds		
7439921	Lead	Particulate
Manganese Compounds		
7439965	Manganese	Particulate
7439976	Mercury	Particulate
Fine Mineral Fibers		
383	Fine Mineral Fibers	Particulate
608	Ceramic Fibers (man-made)	Particulate
613	Glasswool (man-made fibers)	Particulate
617	Rockwool (man-made fibers)	Particulate
616	Slagwool (man-made fibers)	Particulate
Nickel Compounds		
7440020	Nickel	Particulate
1313991	Nickel Oxide	Particulate
604	Nickel Refinery Dust	Particulate
12035722	Nickel Subsulfide	Particulate
Polycyclic Organic Matter		
15-PAH		
250	PAH/POM unspecified	VOC

Table B – Individual HAPs within HAPs Group:

Pollutant Code	Pollutant	CES HAP Category
83329	Acenaphthene	VOC
208968	Acenaphthylene	VOC
120127	Anthracene	VOC
191242	Benzo[g,h,i]Perylene	VOC
206440	Fluoranthene	VOC
86737	Fluorene	VOC
85018	Phenanthrene	VOC
129000	Pyrene	VOC
8007452	Coal Tar	VOC
194592	3,4,5,6-Dibenzcarbazol	VOC
226368	1,2,5,6-Dibenzacridine	VOC
57835924	4-Nitropyrene	VOC
602879	5-Nitroacenaphthene	VOC
86748	Carbazole	VOC
7-PAH		
56553	Benz[a]Anthracene	VOC
50328	Benzo[a]Pyrene	VOC
205992	Benzo[b]Fluoranthene	VOC
207089	Benzo[k]Fluoranthene	VOC
218019	Chrysene	VOC
53703	Dibenzo[a,h]Anthracene	VOC
193395	Indeno[1,2,3-c,d]Pyrene	VOC
56832736	Benzofluoranthenes	VOC
130498292	PAH, Total	VOC
Non-15 PAH		
779022	9-Methylanthracene	VOC
26914181	Methyl Anthracene	VOC
2422799	12-Methylbenz(a)Anthracene	VOC
57976	7,12-Dimethylbenz[a]Anthracene	VOC
56495	3-Methylcholanthrene	VOC
203338	Benzo(a)Fluoranthrene	VOC
195197	Benzo(a)Phenanthrene	VOC
192972	Benzo[e]Pyrene	VOC
203123	Benzo(g,h,i)Fluoranthene	VOC
205823	B[j]Fluoranthen	VOC
189559	Dibenzo[a,i]Pyrene	VOC
65357699	Methylbenzopyrene	VOC
3697243	5-Methylchrysene	VOC
7496028	6-Nitrochrysene	VOC
41637905	Methylchrysene	VOC
224420	Dibenzo[a,j]Acridine	VOC
192654	Dibenzo[a,e]Pyrene	VOC
189640	Dibenzo[a,h]Pyrene	VOC
191300	Dibenzo[a,l]Pyrene	VOC
284	Extractable Organic Matter (EOM)	VOC
607578	2-Nitrofluorene	VOC
90120	1-Methylnaphthalene	VOC
91587	2-Chloronaphthalene	VOC
91576	2-Methylnaphthalene	VOC

Table B – Individual HAPs within HAPs Group:

Pollutant Code	Pollutant	CES HAP Category
198550	Perylene	VOC
832699	1-Methyl-Phenanthrene	VOC
42397648	1,6-Dinitropyrene	VOC
42397659	1,8-Dinitropyrene	VOC
2381217	1-Methylpyrene	VOC
5522430	1-Nitropyrene	VOC
Radionuclides		
605	Radionuclides (including Radon)	Neither
10043660	Iodine-131	Neither
7440611	Uranium	Neither
Selenium Compounds		
7782492	Selenium	Particulate
Dioxins/Furans as 2,3,7,8-TCDD TEQs - WHO2005		
628	Dioxins/Furans as 2,3,7,8-TCDD TEQs - WHO2005	VOC
35822469	1,2,3,4,6,7,8-Heptachlorodibenzo-p-Dioxin	VOC
39227286	1,2,3,4,7,8-Hexachlorodibenzo-p-Dioxin	VOC
57653857	1,2,3,6,7,8-Hexachlorodibenzo-p-Dioxin	VOC
40321764	1,2,3,7,8-Pentachlorodibenzo-p-Dioxin	VOC
1746016	2,3,7,8-Tetrachlorodibenzo-p-Dioxin	VOC
67562394	1,2,3,4,6,7,8-Heptachlorodibenzofuran	VOC
55673897	1,2,3,4,7,8,9-Heptachlorodibenzofuran	VOC
70648269	1,2,3,4,7,8-Hexachlorodibenzofuran	VOC
57117449	1,2,3,6,7,8-Hexachlorodibenzofuran	VOC
72918219	1,2,3,7,8,9-Hexachlorodibenzofuran	VOC
57117416	1,2,3,7,8-Pentachlorodibenzofuran	VOC
60851345	2,3,4,6,7,8-Hexachlorodibenzofuran	VOC
57117314	2,3,4,7,8-Pentachlorodibenzofuran	VOC
51207319	2,3,7,8-Tetrachlorodibenzofuran	VOC
39001020	Octachlorodibenzofuran	VOC
3268879	Octachlorodibenzo-p-Dioxin	VOC
19408743	1,2,3,7,8,9-Hexachlorodibenzo-p-Dioxin	VOC
Phosphorus Compounds (only phosphorus is a listed HAP)		
7723140	Phosphorus	Particulate

Table C - Pollutant Code Changes:

Old Code	New Code	Pollutant Name
HAZR00002	71556	1,1,1-Trichloroethane
ACEPH	98862	Acetophenone
ACREN	107028	Acrolein
7664417	NH3	Ammonia
BEC	109*	Beryllium Compounds*
BZ	71432	Benzene
PB	7439921	Lead
60343	60344	Methyl Hydrazine
NMHC	VOC	Nonmethane Hydrocarbons
PNA	250	Polynuclear Aromatics

* Although Beryllium Compounds has new listed code, this code should not be used as only the metal ion now requires reporting. See Section ***4.4 - Metal and Other Compound Groups*** above.

Table D - Control Device Codes:

Control Measure Code	Description
101	High-Efficiency Particulate Air Filter (HEPA)
102	Low Solvent Coatings
103	Powder Coatings
104	Waterborne Coatings
109	Catalytic Oxidizer
110	Vapor Recovery Unit
112	Afterburner
113	Rotoclone
119	Dry Scrubber
121	Cyclones (Multiple)
127	Fabric Filter / Baghouse
128	Electrostatic Precipitator - Dry (DESP)
132	Condenser
133	Incinerator
139	Selective Catalytic Reduction (SCR)
140	Selective Non-catalytic Reduction (SNCR)
141	Wet Scrubber
146	Electrostatic Precipitator - Wet (WESP)
147	Increased Air/Fuel Ratio with Intercooling
149	Pre-Combustion Chamber
154	Screened Drums or Cages
157	Screen
19	Catalytic Afterburner
20	Catalytic Afterburner with Heat Exchanger
201	Knock Out Box
202	Spray Dryer Adsorber (SDA)
203	Catalytic Converter

Table D - Control Device Codes:

Control Measure Code	Description
204	Overfire Air
205	Low NOx Burner (LNB)
206	Dry Sorbent Injection (DSI, other than ACI)
207	Activated Carbon Injection (ACI)
208	Freeboard Refrigeration Device
209	Gravity Collector
21	Direct Flame Afterburner
211	Mist Eliminator
212	Steam Injection
213	Water Injection
214	Low Nitrogen Content Fuel
215	Flue Gas Desulfurization (FGD)
217	Dust Suppression
218	Electrostatic Spraying
22	Direct Flame Afterburner with Heat Exchanger
23	Flaring
25	Staged combustion
26	Flue Gas Recirculation
29	Low Excess Air Firing
300	Devices Repeated in Series
301	Fuel reburning
302	Biofilter
303	Catalytic Additives
304	Enclosed Combustor
305	Diesel Particulate Filters (DPF)
306	Duct Sorbent Injection
307	Furnace Sorbent Injection
308	Wet Sorbent Injection
309	Leak Detection and Repair (LDAR) Program
31	Air Injection
310	Non-Selective Catalytic Reduction (NSCR)
311	Other Pollution Prevention Technique
312	Oxidation Catalyst
313	Spray booth and Filter
314	Spray booth and Overspray Arrestor
315	Spray guns - High Volume, Low Pressure (HVLP)
316	Ultra Low NOx Burners (ULNB)
317	Recuperative Thermal Oxidizer
318	Product Substitution
319	Regenerative Thermal Oxidizer
35	Magnesium Oxide Scrubbing
36	Dual Alkali Scrubbing
38	Ammonia Scrubbing
41	Dry Limestone Injection
42	Wet Limestone Injection
45	Sulfur Plant

Table D - Control Device Codes:

Control Measure Code	Description
46	Process Change
48	Adsorption - Activated Carbon or other
49	Liquid Filtration System
50	Packed-Gas Absorption Column
51	Tray-Type Gas Absorption Column
52	Spray Tower
54	Process Enclosed
56	Dynamic Separator (Dry)
57	Dynamic Separator (wet)
58	Mat or Panel Filter
59	Metal Fabric Filter Screen (Cotton Gins)
60	Process Gas Recovery
63	Gravel Bed Filter
64	Annular Ring Filter
65	Catalytic Reduction
66	Molecular Sieve
67	Wet Lime Slurry Scrubbing
68	Alkaline Fly Ash Scrubbing
69	Sodium Carbonate Scrubbing
70	Sodium-Alkali Scrubbing
75	Cyclone / Centrifugal Collector
79	Dry Electrostatic Granular Filter (DEGF)
82	Ozonation
85	Wet Cyclonic Separator
86	Water Curtain
87	Nitrogen Blanket
88	Conservation Vent
89	Bottom Filling
93	Submerged Filling
95	White Paint
96	Vapor Lock Balance Recovery System
97	Secondary Seal on Floating Roof Tank
99	Other Control Device

Table E - Metal Ion Conversion Table:

Example Calculation:

- Facility emits 100 lb/year of lead oxide (CAS # 1335257).
- Fraction of lead in lead oxide from "Metal Ion Fraction" column is 0.928.
- 100 lb/year lead oxide X 0.928 = **92.8 lb/year of lead ion**.
- Report 92.8 lb/year of lead ion with the "Metal Pollutant Name" Lead and the "Metal Pollutant Code" 7439921.

Table E - Metal Ion Conversion Table:

Compound CAS	Metal Compound Name	Metal Ion Fraction	Metal Ion Pollutant Code	Metal Ion Pollutant Name
7788989	Ammonium Chromate	0.342	18540299	Chromium (VI)
10294403	Barium Chromate	0.204	18540299	Chromium (VI)
18454121	Lead Chromate Oxide	0.095	18540299	Chromium (VI)
18454121	Lead Chromate Oxide	0.758	7439921	Lead
10588019	Sodium Dichromate	0.394	18540299	Chromium (VI)
14977618	Chromyl Chloride	0.336	18540299	Chromium (VI)
14018952	Chromic Acid (H2Cr2O7), Zinc Salt (1:1)	0.367	18540299	Chromium (VI)
7788967	Chromyl Fluoride	0.426	18540299	Chromium (VI)
13765190	Calcium Chromate	0.329	18540299	Chromium (VI)
7758976	Lead Chromate	0.160	18540299	Chromium (VI)
7758976	Lead Chromate	0.637	7439921	Lead
13530659	Zinc Chromate	0.284	18540299	Chromium (VI)
10034829	Sodium Chromate(VI)	0.220	18540299	Chromium (VI)
14307336	Chromic Acid (H2Cr2O7), Calcium Salt (1:1)	0.403	18540299	Chromium (VI)
7789095	Ammonium Dichromate	0.413	18540299	Chromium (VI)
7789006	Potassium Chromate	0.265	18540299	Chromium (VI)
13530682	Chromic Sulfuric Acid	0.477	18540299	Chromium (VI)
7775113	Sodium Chromate	0.317	18540299	Chromium (VI)
7789120	Chromic Acid (H2Cr2O7), Disodium Salt, Dyhydrate	0.347	18540299	Chromium (VI)
7778509	Potassium Dichromate	0.351	18540299	Chromium (VI)
7789062	Strontium Chromate	0.253	18540299	Chromium (VI)
14307358	Lithium Chromate	0.394	18540299	Chromium (VI)
11103869	Zinc Potassium Chromate	0.219	18540299	Chromium (VI)
50922297	Zinc Chromite	0.390	16065831	Chromium III
1308141	Chromium Hydroxide	0.505	16065831	Chromium III
10025737	Chromium (III) Chloride	0.328	16065831	Chromium III
21679312	Chromium(III) Acetylacetonate	0.149	16065831	Chromium III
1308389	Chromic Oxide	0.684	16065831	Chromium III
10060125	Chromium Chloride, Hexahydrate	0.195	16065831	Chromium III
10049055	Chromium (II) Chloride	0.423	16065831	Chromium III

Table E - Metal Ion Conversion Table:

Compound CAS	Metal Compound Name	Metal Ion Fraction	Metal Ion Pollutant Code	Metal Ion Pollutant Name
10101538	Chromic Sulfate	0.261	16065831	Chromium III
12018018	Chromium Dioxide	0.619	16065831	Chromium III
12018198	Chromium Zinc Oxide	0.390	16065831	Chromium III
136	Chromium & Compounds	1.000	7440473	Chromium
1271289	Nickelocene	0.311	7440020	Nickel
3333673	Nickel Carbonate	0.486	7440020	Nickel
373024	Nickel Acetate	0.328	7440020	Nickel
12710360	Nickel Carbide	0.936	7440020	Nickel
12054487	Nickel Hydroxide	0.633	7440020	Nickel
7786814	Nickel Sulfate	0.374	7440020	Nickel
7718549	Nickel Chloride	0.453	7440020	Nickel
13138459	Nickel Nitrate	0.318	7440020	Nickel
14336700	Nickel 59	1.000	7440020	Nickel
13770893	Nickel Sulfamate	0.234	7440020	Nickel
10101970	Nickel (II) Sulfate Hexahydrate	0.222	7440020	Nickel
6018899	Nickel Diacetate TET	0.236	7440020	Nickel
1314063	Nickel Peroxide	0.710	7440020	Nickel
13462889	Nickel Bromide	0.269	7440020	Nickel
13463393	Nickel Carbonyl	0.344	7440020	Nickel
14220178	Potassium Nickel Cyanide	0.244	7440020	Nickel
226	Nickel & Compounds	1.000	7440020	Nickel
7787475	Beryllium Chloride	0.113	7440417	Beryllium
7787497	Beryllium Fluoride	0.192	7440417	Beryllium
13597994	Beryllium Nitrate	0.067	7440417	Beryllium
13510491	Beryllium Sulfate	0.084	7440417	Beryllium
109	Beryllium & Compounds	1.000	7440417	Beryllium
1304569	Beryllium Oxide	0.360	7440417	Beryllium
10124364	Cadmium Sulfate	0.534	7440439	Cadmium
7789426	Cadmium Bromide	0.413	7440439	Cadmium
1306190	Cadmium Oxide	0.875	7440439	Cadmium
7790809	Cadmium Iodide	0.307	7440439	Cadmium
1306236	Cadmium Sulfide	0.778	7440439	Cadmium
125	Cadmium & Compounds	1.000	7440439	Cadmium
543908	Cadmium acetate	0.483	7440439	Cadmium
10108642	Cadmium Chloride	0.613	7440439	Cadmium
10325947	Cadmium Nitrate	0.471	7440439	Cadmium
2223930	Cadmium Stearate	0.165	7440439	Cadmium
195	Lead & Compounds	1.000	7439921	Lead
7446277	Lead Phosphate	0.507	7439921	Lead
7446142	Lead Sulfate	0.679	7439921	Lead
7784409	Lead Arsenate	0.593	7439921	Lead
7784409	Lead Arsenate	0.215	7440382	Arsenic
13814965	Lead Fluoroborate	0.544	7439921	Lead
1335326	Lead Subacetate	0.770	7439921	Lead
1335257	Lead Oxide	0.928	7439921	Lead

Table E - Metal Ion Conversion Table:

Compound CAS	Metal Compound Name	Metal Ion Fraction	Metal Ion Pollutant Code	Metal Ion Pollutant Name
27253287	Lead Neodecanoate	0.377	7439921	Lead
598630	Lead Carbonate	0.770	7439921	Lead
1317368	Lead (II) Oxide	0.928	7439921	Lead
603	Lead Compounds (Other Than Inorganic)	1.000	7439921	Lead
78002	Tetraethyl Lead	0.641	7439921	Lead
10031137	Lead Arsenite	0.490	7439921	Lead
10031137	Lead Arsenite	0.354	7440382	Arsenic
1314416	Lead (II, IV) Oxide	0.907	7439921	Lead
10099748	Lead Nitrate	0.622	7439921	Lead
1309600	Lead Dioxide	0.866	7439921	Lead
88	Alkylated Lead	1.000	7439921	Lead
61790145	Lead Naphthenate	0.377	7439921	Lead
12626812	Lead Titanate Zircon	0.572	7439921	Lead
12060003	Lead Titanate	0.764	7439921	Lead
7428480	Lead Stearate	0.422	7439921	Lead
301042	Lead Acetate	0.633	7439921	Lead
602	Lead Compounds (Inorganic)	1.000	7439921	Lead
198	Manganese & Compounds	1.000	7439965	Manganese
1336932	Manganese Napthenate	0.138	7439965	Manganese
1317346	Manganese Trioxide	0.696	7439965	Manganese
1313139	Manganese Dioxide	0.632	7439965	Manganese
12079651	Manganese, tricarbonyl (.eta.5-2,4-Cyclopentadien-1-yl)-	0.269	7439965	Manganese
1317357	Manganese Tetroxide	0.720	7439965	Manganese
7722647	Potassium permanganate	0.345	7439965	Manganese
7785877	Manganese Sulfate	0.359	7439965	Manganese
8030704	Manganese Tallate	0.104	7439965	Manganese
10377669	Manganese Nitrate	0.304	7439965	Manganese
7783166	Manganesehypophosphide	0.276	7439965	Manganese
10101505	Permanganic Acid	0.384	7439965	Manganese
1345046	Antimony Trisulfide	0.717	7440360	Antimony
92	Antimony & Compounds	1.000	7440360	Antimony
1327339	Antimony Oxide	0.835	7440360	Antimony
10025919	Antimony Trichloride	0.534	7440360	Antimony
7783702	Antimony Pentafluoride	0.562	7440360	Antimony
16925250	Sodium hexafluoroantimenate	0.471	7440360	Antimony
1309644	Antimony Trioxide	0.835	7440360	Antimony
7778394	Arsenic Acid	0.528	7440382	Arsenic
7784421	Arsine	0.961	7440382	Arsenic
1327533	Arsenic Trioxide	0.757	7440382	Arsenic
3141126	Arsenous Acid	0.357	7440382	Arsenic
93	Arsenic & Compounds (Inorganic Including Arsine)	1.000	7440382	Arsenic
1303282	Arsenic Pentoxide	0.652	7440382	Arsenic
7488564	Selenium Disulfide	0.552	7782492	Selenium

Table E - Metal Ion Conversion Table:

Compound CAS	Metal Compound Name	Metal Ion Fraction	Metal Ion Pollutant Code	Metal Ion Pollutant Name
253	Selenium & Compounds	1.000	7782492	Selenium
7446084	Selenium Dioxide	0.712	7782492	Selenium
7446346	Selenium Monosulfide	0.711	7782492	Selenium
7783791	Selenium Hexafluoride	0.409	7782492	Selenium
7783008	Selenous Acid	0.612	7782492	Selenium
12640890	Selenium Oxide	0.832	7782492	Selenium
7783075	Hydrogen Selenide	0.975	7782492	Selenium
151508	Potassium Cyanide	0.400	57125	Cyanide
144	Cyanide & Compounds	1.000	57125	Cyanide
143339	Sodium Cyanide	0.531	57125	Cyanide
140294	Benzyl Cyanide	0.222	57125	Cyanide
13967505	Gold (I) Potassium Cyanide	0.090	57125	Cyanide
13943583	Potassium Ferrocyanide	0.424	57125	Cyanide
14220178	Potassium Nickel Cyanide	0.432	57125	Cyanide
506649	Silver Cyanide	0.194	57125	Cyanide
37187647	Gold Cyanide	0.117	57125	Cyanide
78820	2-Methyl-Propanenitrile	0.377	57125	Cyanide
544923	Copper Cyanide	0.291	57125	Cyanide
557211	Zinc Cyanide	0.443	57125	Cyanide
139	Cobalt & Compounds	1.000	7440484	Cobalt
1317426	Cobalt Sulfide	0.648	7440484	Cobalt
7542098	Cobalt Carbonate	0.487	7440484	Cobalt
1307966	Cobalt Oxide	0.787	7440484	Cobalt
1308061	Cobalt Oxide (II,III)	0.734	7440484	Cobalt
16842038	Cobalt Hydrocarbonyl	0.343	7440484	Cobalt
13586828	Hexanoic Acid, 2-Ethyl-, Cobalt salt	0.171	7440484	Cobalt
1345160	Cobalt Aluminate	0.333	7440484	Cobalt
136527	Hexanoic Acid, 2-Ethyl-, Cobalt(2+) Salt	0.171	7440484	Cobalt
61789513	Cobalt Naphtha	0.188	7440484	Cobalt
10124433	Cobalt Sulfate	0.375	7440484	Cobalt
22967926	Mercury (Organic)	0.930	7439976	Mercury
62384	Mercury Acetato Phen	0.596	7439976	Mercury
7487947	Mercuric Chloride	0.739	7439976	Mercury
199	Mercury & Compounds	1.000	7439976	Mercury
201	Gaseous Divalent Mercury	1.000	7439976	Mercury
202	Particulate Mercury	1.000	7439976	Mercury
200	Elemental Mercury	1.000	7439976	Mercury

Table F - Webpage and Email Summary List:

Source	Link
Webpages	
SLEIS	https://apps.dep.wv.gov/SLEIS
SLEIS Registration Form	http://www.dep.wv.gov/daq/planning/inventory/Pages/default.aspx
SCC List	http://www.dep.wv.gov/daq/planning/inventory/Pages/PointSources.aspx
Filterable and Condensable PM Presentation	http://www.dep.wv.gov/daq/planning/inventory/Documents/slideshows/Filterable%20and%20Condensable%20PM.pdf
Emissions Factors for Condensable Particulate Matter Emissions from Electric Generating Units	http://www.dep.wv.gov/daq/planning/inventory/Documents/Emissions%20Factors%20for%20Condensable%20Particulate%20Matter%20Emissions%20from%20Electric%20Generating%20Units.pdf
PM Calculator	http://www.epa.gov/ttn/chief/eiinformation.html
USEPA's CHIEF Emission Inventories	http://www.epa.gov/ttn/chief/eiinformation.html
AP-42	http://www.epa.gov/ttn/chief/ap42/index.html
45CSR31 and 45CSR31B	http://www.dep.wv.gov/daq/rulessummary/Pages/default.aspx
Email Addresses	
Registration Form Address	mailto:DEP.AEI@wv.gov
David Porter Address	mailto:david.j.porter@wv.gov